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VOL. 20, NO. 12

PSYCHOLOGICAL REVIEW PUBLICATIONS

December, 1923

# Psychological Bulletin

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JAMES R. ANGELL, YALE UNIVERSITY, (*Monographs*) AND  
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WITH THE CO-OPERATION OF

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PUBLISHED MONTHLY BY THE

PSYCHOLOGICAL REVIEW COMPANY

27-29 COLUMBIA STREET, ALBANY, N. Y.

AND PRINCETON, N. J.

AGENTS: G. E. STECHERT & CO., LONDON (2 Star Yard, Carey St., W.C.);  
PARIS (16, rue de Condé)

Entered as second-class matter at the post-office at Albany, N. Y., September 25, 1923

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## PSYCHOLOGICAL REVIEW COMPANY

ALBANY, N. Y., AND PRINCETON, N. J.

**FOREIGN AGENTS:** G. E. STECHERT & CO., London (2 Star Yard, Carey St., W.C.) Paris (16, rue de Condé)

Vol. 20, No. 12

December, 1923

THE  
PSYCHOLOGICAL BULLETIN

GENERAL REVIEW

MENTAL DEVELOPMENT OF CHILDREN

BY BIRD T. BALDWIN

WITH THE COLLABORATION OF LORLE I. STECHER AND MADORAH SMITH

*University of Iowa*

1. GENERAL TEXTS AND OUTLINES ON INFANTS AND YOUNG CHILDREN

Few contributions of technical psychological import to child development have been published during the past two years. From the large number of quasi-scientific approaches to the general educational problems a few titles may be selected on account of their contributions to the methods of approaching child psychology or on account of their data which will be of material aid in the interpretation of the meaning of childhood and infancy.

Mile. Descoedres (30) has published a very significant collection of data on a considerable number of children two to seven years of age. By means of some ingenious experiments of her own and some adapted from Decroly she has studied the development of language, vocabulary, observation, motor ability, number concepts, and judgment, and has formulated a scale for the measurement of the mental growth of young children. She found little sex difference except that the girls were somewhat more advanced in manual aptitude (tested by bead stringing). In general, children from the better social classes were more advanced than those from poor families, especially in language; this difference was less in older children. Rural children were superior to Paris children probably because of greater maternal care.

Koffka (67) gives an account of the present state of child psychology. He surveys the original equipment of the newly born infant and discusses the process of learning.

Montet and Bersot (76) have published a general study of the psychological development from childhood to old age dealing especially with the development of the child's concept of money values. At six to seven children usually say money is for "buying things." At ten to eleven years the social life begins to show up in the answers and at twelve years the ease of circulation of money is more often mentioned.

Gesell (50) gives a survey of the hygienic and educational problems presented by the pre-school child and sets forth the biological and psychological significance of these early years. Jonckheere (64) treats questions relating to the physical, intellectual, and moral development of the first six years of a child. Baker (7) outlines the educational functions of the home from birth to eleven years in a popular style, presenting fundamental factors in the successful upbringing of children. Chapin (23) from a biological viewpoint treats of the physical, mental, and moral aspects of child culture. Niemeyer (81) attempts to offer cross sections of a child at various stages from birth to sixteen years. These stages she gives as those of (a) education of muscles and nerves, (b) classification of objects and imagination, (c) transition, (d) more stability and memory, (e) self- and sex-emotions. MacCarthy (72) offers a plan for the training and education of children from two to seven. Ferrière (40) discusses education in the family indicating characteristic traits of different ages and methods of dealing with each. Rasmussen's (97) three-volume book on development in the early years of life has been translated and he has published a second work dealing with the later years. His books are based on the systematic observation of his two daughters. Drummond (34) has published a second book supplementing her book on the infant. This book continues the study of the child at about five years of age. Another book (35) of hers on child psychology has just appeared. Bühler (20) discusses the inheritance of psychic qualities, content of consciousness at birth, and the development of the senses, feeling, emotion, concepts, and speech. He gives a systematic presentation of facts derived from biographical and experimental literature of children. The first year is described in detail. Armond Delille and Barbarin (6) treat of the hygiene of the normal child from infancy to the end of school, factors

in his development and ways to combat them, and the physical education of the child. A new edition has appeared of Ament's *Die Seele des Kindes*, and two Italian books by Terranova (124) and Polla-Caselli (94).

## 2. INFANCY

Watson and Raynor (128) through experimental work were able to establish a conditioned fear response. They found that emotional transfer took place and that both response and transfer persisted. The primacy of fear, love, and possibly rage were established. The Watsons (129) made other experimental studies on a number of infants, studying grasping, reaching, dexterity, age of sitting alone, and of the disappearance of the Babinski reflex in development, eye movements, blinking, crawling, extensor thrust, and defensive responses. They also studied the primal stimuli to fear, rage, and love.

Gesell (52) gives an abstract of an investigation of the reactions of the fifty nine-months-old babies through the type of response made in ring grasping, persistent reaching, acceptance of third object, fine prehension, unwrapping paper, looking for a cube hidden under a cup and looking for a fallen object.

Myers (79) reports inhibitions displayed by two children from birth until several years of age. Skerrett (117) has studied one infant to determine its emotional reactions, which were found to agree with those found by Watson, and its trainability by a systematic attempt to teach it to hold a bottle. Skerrett (118) has also studied the memory span of a two-year-old child. At twenty-four months, the span was six syllables. At twenty-five months the digit span was four on two repetitions and three digits on one trial. Oatman (83) gives data on physical and linguistic development of an eighteen-months-old boy, and on his personal qualities and development in walking. Popper (95) reports a study on the phenomena of sucking in infants one-half hour to ten days old.

## 3. GROWTH OF LANGUAGE

Fischer (41) outlines the following points to be considered in the determination of the vocabularies of individual children: keeping track of each word spoken, determination of the content of speech for one day, vocabulary for a particular class of objects, comparison with adult vocabulary, evaluation of social environment and school

year, use of stimulus words to determine certain classes of vocabulary, development of grammar, sentence structure and changes in sentences used.

Schlag (114) reports on the speech of two pre-school girls and analyzes their vocabulary according to parts of speech and imagery. He believes the average number of words in a sentence mirrors the development of the child. He also compares the speech of children six and eight years of age.

Bloch (15, 16) from observations on his three children discusses types of mispronunciation, the understanding of language, and the extension of the meaning of words. He calls attention to the extension of the use of nouns to all sorts of actions, and also to the stage of rapid increase of vocabulary that takes place in a child's acquisition of language.

Pavlovitch (85) has made a very detailed study of the acquisition of Serbian and of French by his own son. He finds two epochs: one up to twenty months when analogies of meaning and association by resemblance are more important; the second, when association by opposition and restriction of meaning becomes most important. He also studies first articulations, understanding of language, imperfections in perception and articulation and the relative importance of the two languages.

Schäfer (111, 112) determines the age of speaking the first word that conveys meaning by comparisons of various biographies of babies and the observation of his own child. Drever (33) has investigated the vocabularies of a number of free kindergarten children from two to five years old. He gives a list of most commonly used words, the total numbers of words used by each child and the number of words of each part of speech.

Jespersen's (62) study is a more general account, treating not only of the child's acquisition of language, but of history, causes of change, and general development of speech. Schiefferdecher (113) investigated the evolution of the muscles of mastication in men and animals and concludes the marked differentiation found is due to the functioning of these muscles in speech. The masseter appeared to be most important for speech of the muscles investigated.

Other observations on the speech of one or two children have been made by the Bolins on a Swedish girl (18); and by the Hulls (58) who analyze the vocabulary of a child at twenty-four and at twenty-eight months, and give parallel learning curves in

speech and in voluntary control of the bladder. A new edition of the Sterns' book on the speech of children has been published (121).

#### 4. EXPERIMENTS ON YOUNG CHILDREN

It is only recently that young children have been studied under experimental conditions. The Child Welfare Research Station connected with the State University of Iowa has opened a psychological laboratory for the study of children two to four years of age. A description of the laboratory is found in Vol. 22 of the *Elementary School Journal* (37) and a preliminary report (13) of the results of experiments tried was given before the American Psychological Association. A series of twenty-two psychological experiments was made with the children including tests of motor control, rhythm, memory, association; perception of form, color, weight, and number; performance tests and the Stanford Binet. The results of the work up to date will be published in book form during the year. Similar work is being carried on in the Merrill Palmer Nursery School in Detroit, and an article discussing the use of Montessori performance tests there has been published.(131) The Bureau of Educational Experiments (63) is also gathering data for research purposes in its Nursery School in New York.

Kubo (68) has published a report of the transactions of the Japanese Institute for Child Study which includes articles on mental and physical development of children on entering school, development of language in children of pre-school age, lung capacity of girls; temperature of body, pulse, and respiration of kindergarten children; arithmetical ability, and methods for measuring mental ability.

A French school (36) for child cultivation financed by the American Red Cross and Child Health Association has recently been founded as a five year experiment and includes training in all lines of child care.

Town (125) made a detailed analytic study of a group of 52 five- and six-year-old children which included a complete physical examination with tests for visual and auditory acuity and pitch discrimination; anthropometric measurements; speech and mental examinations. The last included two general intelligence tests and forty-nine analytic tests. The performance of each child was compared with the percentile score of the group. The study clearly shows that the basis of physical and character defects is already fixed at the time of school entrance.

Reymert (98) studied the development of verbal concepts and memory in a group of fifty-six children five to seven and one-half years old. He gave each child eight mathematically graded series of two opposite stimuli in five different sense impression fields and studied the different procedures used by the children in remembering the series. The development of the abstraction process seems to have a close resemblance to the development of number and word concepts. The children did best in the auditory field; in other fields there was much difference in sex and age. This kind of memory had little correlation with school brightness and general intelligence but a correlation was found with tapping.

##### 5. MENTAL GROWTH CURVE

Baldwin and Stecher (11) have published a monograph comparing the mental growth curve of normal and superior children based on Stanford Binet retests of 143 normal and superior children, five to fourteen years old, tested from two to five times. The M. A. curve shows correspondence to the height growth curve. The I. Q. curve is practically horizontal for both groups and for both sexes with increases resembling early adolescent spurts in physical growth curves. They do not, however, believe the present scale is well suited to measurement of mental growth. A later study (12) presenting additional data confirms their results. Murdock and Sullivan (77) believe they find some evidence of an adolescent increase in the rate of growth because in a study of weight, stature and I. Q.'s of 580 children of each sex from six to eighteen years the results show that one sex exceeds the other in each measure at approximately the same age so that at the time of rapid increase in weight and stature the I. Q. also increases more rapidly. But Brooks (19) in a study of 171 children from nine to fifteen years, using a battery of 20 tests over a period of two years found no adolescent or preadolescent spurts, no sex differences and no cessation of growth.

In normal subjects, Ballard,(14) using a test in detection of absurdities on 2,000 children, found a marked slowing down of the curve of growth after twelve years and almost complete cessation of growth after sixteen years. Burt (21) from repeated measurements of 3,000 London school children also found a diminution in mental ratio in special class cases.

The question of the stability of the I. Q. has been discussed and studied by means of retests by Wallin (127), Garrison (45), Fer-

mon (39), Freeman (42), Terman (123), Rosenow (104), Peterson (89), Lincoln (70), Gray and Marsden (54), Rugg and Colloton (106), Teagarten (122), Stenquist (120), Claparède (26), and Graves (53). Cases of marked change in I. Q. are reported by Root (102, 103). Ide (61) reports cases where the I. Q. was increased through training.

Several studies deal primarily with feeble-minded children. Kuhlmann (69) reported results on 639 cases, mostly feeble-minded, examined two to five times, each of which showed a decrease in I. Q. with age with a greater decrease for the higher grades than for the lower. Doll (32) presenting data based on at least five retests of feeble-minded subjects, concludes that the feeble-minded subjects reach their limit of mental growth before fifteen years of life age. He gives four types of theoretical growth curves. Anderson (4) gives the results from repeated examination of a group of defective children. She found the greater number of cases (47 per cent) continued to develop at a rate that was a constantly decreasing variable until final arrest and the next larger number (22 per cent) developed at a constant rate with time of final arrest. In another group, 19 per cent appeared to have already reached the time of final arrest when first tested and made no further progress. She also found that there was a tendency for cases where the I. Q. was between 50 and 80 to show a decrease in median I. Q. The greatest loss was shown by the highest grade cases. Other studies dealing with the constancy of the I. Q. in mental defectives are by Henmon and Burns (56) and by Poull (96).

#### 6. FACTORS INFLUENCING MENTAL DEVELOPMENT

There are several studies treating of the various factors that may influence or correlate with mental development. Baldwin (8) made a diagnostic study of 129 pupils including physical, mental, and educational measurements. The children were relatively inferior physically. For this group there was but little correlation between mental and educational measurements except for silent reading. There was, however, a positive correlation between intellectual ability and physical status. In his book (9) on physical growth of children he gives results showing decided positive correlations between height, weight, area of carpal bones, and other physical measurements and makes application of the concept of physiological age to physical training, mental maturation, pedagogical age, age for enter-

ing industrial work, and social age. In another study (10) he finds from data based on consecutive measurements positive correlations between height and mental age, and weight and mental age. The mean mental age of a group of physiologically accelerated children is higher than for physiologically retarded children.

Gesell (51) gives a detailed study of the mental and physical correspondence in nine-year-old twin sisters who in anthropometric, educational, and psychological tests as well as dentition, development of carpal bones, skin patterns, tapping, and dynamometer tests, showed marked similarities and frequent identities. Lowell and Woodrow (71), in a study of 402 children, found a positive but low correlation between dentition, intelligence, and development of carpal bones. Naccarati (80) found a positive correlation between intelligence and ratio of height to weight in three groups of university students.

Yates (132), in a study of the twenty-five brightest seniors of Oakland high schools in comparison with twenty-five of average intelligence, found the pupils with superior intelligence were also quicker in learning to talk and walk, in cutting first teeth, and in reaching physiological maturity; and were more interested in school, athletics, and music, but less in art. The Almacks (3), in a study of superior children in high school, also conclude that they are superior physically and come from good homes. Cleveland (27), comparing 140 children in special advanced classes with 140 normal pupils, found that a higher percentage of the bright children were of the proper weight for their height. Root (101), in a study of 53 supernormal children, found they were of superior health, from superior homes, the majority developed early, and in height and weight they were slightly above the average.

Rudisill (105) found a relationship between physical capacity and intelligence in men but not in women, and between academic performance and physical capacity in women but not in men. He used tests of tracing, grip, tapping, endurance, and vital capacity besides academic grades and intelligence test scores. Doll (31) deals with physical growth and mental growth. The second part of his article is concerned with functional development—physiological, psycho-physical, educational, economic, and moral.

Rogers (99) has studied the effect of adenoids and diseased tonsils on general intelligence and found it very slight if any. In the first six months there was a slight gain in weight; in the second six

months a more rapid gain in weight, very slight gain in height and increase in speed of tapping; but in neither period was there a rise in I. Q. or a gain over the control group in strength of grip or in the Healy test used. Mallory (75), from a survey of the elementary grades in Humboldt, Tenn., concludes that physical defects are directly associated with low scores in school, and he ranks defects as to degree of handicap—(a) nasal obstruction, (b) defective teeth, (c) defective hearing, (d) defective tonsils, and (e) very slightly defective eyesight. Sandwick (109) finds a relation between physical health and mental efficiency. In a study of 423 high school children by means of group intelligence tests and physical examination he found in the group with the highest intelligence scores a total of 27 defects. Fifty-two and five-tenths per cent of this group had no physical defects. No children of the group with the lowest scores were free from defects and there was a total of 125 defects. Pearson (86), from the examination of 2,388 boys and 2,290 girls, finds some correlation between health and intelligence, both of which change little if any throughout school life. He has recently published a book (87) on the relationship of health to the psychical and physical characters of school children.

Hunt, Johnson, and Lincoln (59) have published an account of experiments in nutrition during which comparisons were made of the mental traits of under- and well-nourished children but they arrive at no definite conclusion. Another study of the influence of nutrition is reported by Bobertag (17).

O'Shea (84) has studied the effect of tobacco on mental efficiency and concludes that it tends to retard and disturb mental processes but slightly, although there is great variability in different individuals at different times. It is, however, a deterrent in high school and has an injurious effect on the immature.

Webb (130) has studied the relationship of character and intelligence through a study of examination ability, and intelligence tests, physique, athletic, and character ratings of 140 individuals—boys of about twelve years, and men. He finds one general factor existing for all mental processes and another factor in close relation to persistence of motives which exerts a wide influence on character.

In an investigation of 165 high school students by Sangren (110) the best students were shown to possess in a higher degree than the others qualities such as application and ability to absorb new ideas which give them a greater chance of post-school success.

Three studies on the effect of bilingualism and intelligence are reported, two by Saer (107, 108) and one by F. Smith (119). All are investigations of Welsh children and students and all point to the conclusion that monoglot children are at an advantage intellectually. Saer's tests of dexterity indicate that mental confusion has been carried over.

#### 7. SPECIAL LINES OF DEVELOPMENT

Oakden and Stuart (82) have investigated the development of the knowledge of time in children by asking their age, the time of day, the date, and other questions involving time. Duration questions were the most difficult. Adams (2) studied the quantitative guesses of children and found the most frequent guesses were either one-half or very near the actual amount and that there was a strong tendency to underestimate large numbers. Piaget reports investigations on the development of the idea of a part (91) in children six to fourteen years and on types of description (90) which he differentiates as subjective, objective, intelligent, and superficial. Mallart (74) has studied utilitarianism in children's definitions of things. Wadmore (126) has investigated the ideas of children about eleven years old on social and industrial questions, and believes the results show that children are more intelligent in those lines than is generally believed and that they have a considerable idea of the present discontent. Shepherd (116) has studied the factors influencing the religious ideas and beliefs of children eight to thirteen years old and concludes that education is a very important factor and that other factors are social environment, confidence in others, authority, and thought. Roloff (100) has studied the first beginnings of religious ideas in two little girls of three and five years old, respectively. Chapman (24) has attempted to test children's capacity for studying relative values by statements giving reasons for going to high school, for saving money, and for reading good literature. The capacity to judge relative values was found to be rather poor. The Sterns (121) have investigated memory and testimony in childhood and Claparède (25) the knowledge of differences and similarities.

#### 8. INDIVIDUAL AND RACIAL DIFFERENCES

Garth has made studies comparing full- and mixed-blood Indians and other races. The first (46) deals with racial differences in mental fatigue. A second study (47) is a comparison of mixed- and

full-blood Indians nine to twenty-six years old by means of associations, memory and word building tests. From this experiment he concludes that the mixed-bloods as a group tend to excel the full-bloods, but their scores were favored by superior social status and by educational opportunities. A third (48) study is on work curves and includes White, Indian, and Negro children from third to eighth grades. Each racial curve has its idiosyncracies but these are lost in the total distribution. His data show that the Indians are inclined to be more and the Negroes less deliberate than the median White. Another study (49) deals with mental fatigue of mixed- and full-blood Indians and shows that the full-blood Indians resist the rise of fatigue more successfully than the others. The curves of the mixed-bloods indicate an intermediate position between full-blood Indians and Whites. Another study of Indians has been made by Hunter and Sommermeier (60). Using the Otis test on 715 American Indians a positive correlation was found between the scores on the test and the degree of Indian blood.

Comparisons of colored and white children in intelligence by A. M. Jordan (65) and Schwegler and Winn (115) have been made. Both studies found the median of the negro decidedly below that of the white. The difference is principally apparent in the more abstract types of psychic work. These investigations agree with Ferguson's (38) summary of information on the mental status of the American negro. Peterson (88) compared white and colored children in multiple choice learning and found that in time over 97 per cent and in number of repetition over 80 per cent of the whites surpassed the median of the negroes. Arlitt (5) in a study of 243 negro children from both north and south found the I. Q. decreased with increasing age. McFadden and Dashiell (73) have used the Downey will-temperament test in the comparison of white and colored children. They conclude that there is little difference in variability and that only 15.4 per cent of the negroes exceed the median of the whites in strength of personality. Comparisons of the scores on each test are given in detail and the influence of age on each race is studied.

Carreon (22) draws comparisons between Filipinos and whites in educational and Otis intelligence tests. The spelling and speed in arithmetic medians were lower but medians of accuracy in arithmetic higher. Herrick (57) gives results of form-board tests on children, four to fourteen years old, in India. At four years the Indian chil-

dren were five seconds faster than the American children but at five years old the American children had caught up and after that they led with an average difference at each age of six and one-third seconds. Yeung (133), studying 109 Chinese children five to fourteen years old living in San Francisco, and Fukuda (44), studying 24 Japanese children three to twelve years old living in Denver, both obtained average I. Q.'s of 97 and found females slightly superior to males.

Murdock, Pintner, Keller, and Young have each studied the intelligence of different race groups. Murdock (78) compared Hebrews, native Americans, Italians, and negroes, none of whom had difficulty in English. The first two groups averaged about the same score by age and by grade. Thirty per cent of the negroes and less than 15 per cent of the Italians equaled or exceeded the median of the Hebrews. Pintner (92) and Pintner and Keller (93) compared Italian, Polish, German, and a few children of other nationalities, using the National Intelligence test and a nonlanguage test. Only 37 per cent of the foreign group reached the median of the American group on the National Intelligence test, but 50 per cent of the foreign group reached the median of the Americans on the nonlanguage test. He concludes that the discrepancy between foreign children (especially Italians) and Americans as usually shown by verbal tests overemphasizes the difference in intelligence. Young (134) compared Portuguese, Italian and Spanish Mexican children on performance tests. In Army Alpha only seven per cent, and in Army Beta only 16 per cent of the Latins exceeded the median of the Americans. The Latins were also retarded in school. He finds a rough correlation between intelligence and economic status and shows quite conclusively that the language factor is not so great as has been supposed.

R. H. Jordan (66) checked nationality and school progress and concluded that although language difficulty was a handicap there were no marked differences of foreign and native-born school children. Davenport (29) has compared the social traits of various races.

Gray and Marsden (55) have compared the intelligence of country and town children by the use of the Stanford Binet test and concluded that country children are not much less intelligent than town, and are more so than some groups of town children. They list the tests, most difficult and easiest for each group. Frost (43) has

compared the achievement in educational tests in country and town schools and found the results were in favor of the larger school systems and longer school year.

Counts (28) has made an elaborate study of high school pupils investigating the relation of the parental occupation to enrollment, progress through school, curriculum elected, expectations after graduation, psychological data, and other facts, and has pointed out that secondary education in America is very selective.

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## DISCUSSION

### THE ORGANISMIC VS. THE MENTALISTIC ATTITUDE TOWARD THE NERVOUS SYSTEM

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Several considerations prompt the writer to undertake a brief discussion of some of the points referred to by Professor Warren in his recent comments<sup>1</sup> upon my criticism of the neuronic theory, although I believe that I have already sufficiently worked over these points in various articles.

In the first place, Professor Warren suggests that my exposition of the nature of the nervous system and its function in psychological phenomena is not clear in all its details. Naturally then it devolves upon me to attempt to make the matter as transparent as possible, although I suspect that at least some of Professor Warren's difficulty is to a great extent owing to his inseverable adherence to a very different tradition from that of the writer, resulting in a fundamentally different psychological attitude.

Again, Professor Warren raises some very important methodological problems which assuredly merit consideration.

As we have implied Professor Warren and the writer approach the problem of the nervous system from radically different points of view concerning the character and operation of the essential psychological data and principles. As I understand Professor Warren's psychology he starts with a psychological background which may be considered as a specific sort of metaphysical perspective, a perspective, namely, that bases his scientific work on the proposition or belief that the world about us consists of electrons grouped into atoms, molecules, cells, and organisms, and that as a matter of fact we do not experience immediately the trees, houses, books, men, etc., situated in the outer world beyond the body, but merely the cerebral effects of stimulation by those objects. Accordingly, the outer world is brought

<sup>1</sup> This JOURNAL, 20, 433.

in to us—we do not go forth and explore it.<sup>2</sup> In accordance with such a conception the facts of psychology consist of some sort of internal states or processes, which to be made actual or understandable have to be transformed into neural states or processes. Thus Professor Warren starts with assumptions concerning the physical and mental which I cannot accept, since I do not believe there is anything mental or anything physical in the traditional senses of those terms.<sup>3</sup>

In contrast with such a view the writer starts with the conception that psychology deals with the activities of persons and animals, namely, their responses to objects functioning as stimuli for those responses. This viewpoint, in so far as it is based upon a metaphysical conception (overt appreciation of one's methodological standpoint), is a common sense or anti-metaphysical one (in the traditional sense); we consider our whole science to be an elaboration and extension of the observations and principles we have developed in actual living with trees, houses, people, etc. Now our view is that the science of psychology has as its function the description of the actual responses of the psychological organism and the correlation of those facts with others, such as previous contacts of the individual with the same or similar objects, the development of imitative responses to those objects or similar ones, etc. Instead of starting with the abstractions (useful, necessary and important) developed by other scientists (physicists namely) the writer considers that psychologists must start from the same point that the physicist and other older scientists started from when they made their abstractions.<sup>4</sup>

The writer believes that it is only because Professor Warren starts with the sort of conception we have indicated that he makes the nervous system into such a specialized feature of psychological phenomena, making of it a kind of thing it is not at all, and endowing it with properties which it does not have in nature.<sup>5</sup>

<sup>2</sup> Stated practically in Professor Warren's own words. Cf. *Human Psychology*, p. 417.

<sup>3</sup> Cf. My article in *Amer. J. of Psychol.*, 1922, 33, 481-510.

<sup>4</sup> In theory, that is, because physicists are not agreed upon their abstractions, and, moreover, any set of abstractions actually employed has had an enormously long and tortuous development and was not rationally determined.

<sup>5</sup> With Professor Warren the writer accepts every genuine fact discovered by the neural physiologists. What I am objecting to is so interpreting those facts as to make neural mechanisms into conscious or unconscious determiners of muscle action and the means of "reinstating" and connecting, or associating "ideas."

What is the nervous system and what are its functions? So far as the present writer is concerned, and as he has already pointed out elsewhere,<sup>6</sup> the nervous system is nothing but one of a series of ten or more component factors of every response which a psychological organism makes to a stimulus object, thing, or condition. In no sense is it a cause of the operation of any of the other components in a response. As Professor Warren quotes me, we might just as well say that the operation of the nervous system in any specific activity is the effect of the operation of the muscles. Either statement is untrue because as we have indicated, the neural, muscular, glandular, affective, perceptive or discriminative factors are all component functions, each constituting a member of a large unified activity.<sup>7</sup> In the sense that the nervous system is not only not an adequate or a relevant cause but no cause at all, do we say then that when it is made into a cause it is a mysterious and magical procedure.

Professor Warren seemingly gives the impression that a special potency attaches to hidden things. I do not think there is anything hidden about the nervous system so far as scientific psychology is concerned. To be sure, since we know comparatively little about anything there is no wonder that we know very little about such infinitely intricate phenomena as neural mechanisms. But my point is that the sort of causal potency of the nervous system to bring about effects in the other (coördinate) phases of a reaction system which

\* A Tentative Analysis of the Primary Data of Psychology, *J. of Philos.*, 1921, 23, 253; The Psychology of Reflex Action, *Amer. J. of Psychol.*, 1922, 33, 19; The Nervous System, Psychological Fact or Fiction, *J. of Philos.*, 1922, 19, 38, etc.

<sup>7</sup> At this point we might cast a glance at Professor Parker's conception of the prior phylogenetic development of muscle to nerve tissue as evidenced by the organization of sponges. (*The Elementary Nervous System*, 1919; *Smell, Taste and Allied Senses in the Vertebrates*, 1922). While the writer rather agrees with Herrick's organicistic conception as against Parker (*Science*, 1922, 56, 515) the fact that so eminent a biologist as Parker holds the view he does, bids us pause before deciding upon the functional primacy of the neural mechanisms. The writer considers Professor Herrick's suggestion (*ibid*, p. 516) "that the so-called muscles of sponges are excitomotor organs with lowered excitation threshold and that the excitation mechanism is elaborated within them parallel with the contractile mechanism rather than apart and subsequently," a decided point in favor of his organicistic theory, even though this suggestion has to do with comparatively simple animals. Cf., also the comments of Child, *The Origin and Development of the Nervous System*, 1921, 238ff.

Professor Warren is interested in will never be known because no such fact exists. Such discoveries as are being made by the nerve physiologists on integration (*e.g.*, Sherrington) and on nerve conduction (*e.g.*, Gotch, Lucas, Adrian, Lillie) give us less and less encouragement to introduce into the nervous mechanisms anything of such a mysterious character as internal directive forces must be.

To be more explicit, what the neural physiologists and clinicians are teaching us are the intimate functions of the neural apparatus in the work of coördinating and integrating the organism during the performance of the great mass of specific reactions or adaptations which organisms make when stimulated by acts, objects, and conditions of various sorts. Their work takes us farther and farther away from such considerations as how the nervous system can bring about the "reinstatement of ideas."<sup>8</sup> Were it not obvious that nobody has ever recalled anything without an appropriate stimulus thereto, then we might have needed to go on and show that an idea is not something different (either in substance or aspect) from the neural action but a larger reaction system of which the neural fact is an essential (single) component.<sup>9</sup>

In view of the writer's numerous attempts to describe the causes of responses it is somewhat baffling to note that Professor Warren claims that I have ignored the problem of how the muscles are activated or why a certain set of muscles function rather than another in a given situation. Here is probably where Professor Warren is influenced by his particular psychological standpoint to forego consideration of my statements of this type of fact. To take Professor Warren's illustration, "B" grasps the hand of "A" who extends it toward the former. Professor Warren wants to make "B's" reaction a matter of muscle contraction which he explains by saying that

<sup>8</sup> Of interest in this connection are the writings of Head, Aphasia and Kindred Disorders of Speech, *Brain*, 1920, 43, 87; Disorders of Symbolic Thinking and Expression, *British J. of Psychol.*, 11, 2; and Franz, Cerebral Mental Relations, *Psychol. Rev.*, 1921, 28, 81.

<sup>9</sup> Not in accordance with the usual procedure in discussion, namely, in order to show that my opponent really agrees with me, but rather to further our common interest, to wit, psychology, the writer wishes to point out that Professor Warren has done as much as anybody to show the importance of stimuli in psychological phenomena. Cf. *Human Psychology*, 13, 64, 137, etc. Also we believe that Professor Warren's espousal of the double-aspect mind-body hypothesis is an attempt to reach toward an organicistic conception, but the older conception triumphs after all.

the contraction is caused by some phase of the individual's nervous system. Since the present writer does not accept this, Professor Warren thinks we have no way of explaining the happening. Our answer is that Professor Warren entirely disregards the whole set of essential and necessary facts which constitutes what is for me practically the exclusive explanation of the situation. For example, he overlooks entirely the facts concerning the development of "B," that is to say, the kind of reaction systems<sup>10</sup> he has acquired during his residence in a particular set of situations, physical and social; he overlooks the fact that these various situations serve as stimuli for the building up of these responses and for the performance of the responses after they are built up. What causes the contraction of "B's" hand muscles? What else than the whole set of circumstances which include "B's" living in a social system in which hand shaking is a custom?

It is just such interactions of organisms and stimuli objects which constitute the data of psychology, and not the influence of consciousness or experience (neural action) upon the muscles and glands. The study of the development of the reaction systems of hand grasping (non-social fact) and hand shaking (social custom) and their operation (refusal of person to shake hand of man who defeated him for office; or shaking it, a politic act; when he really would rather strike him) gives us the essential psychological facts. In making such a study we see precisely how the stimulus operates and how the response is connected with it. In every case we have a definite scientific cause and effect situation.

Possibly every person has had considerable experience in observing the whole procedure in the case of language development and operation. Here you observe the building up of the verbal reaction systems through the influence of definite stimulation and then the precise reaction systems operating whenever the appropriate stimuli reappear or are re-presented. In this case what actual muscles are used and

<sup>10</sup> In the nature and operation of these reaction systems we find all of the actual facts which Professor Warren is interested in. In the formation of these reaction systems by the stimulation of the person we find the coördination of muscles of a particular segment of the organism, the integrating activities of the nervous system and all the other factors involved. But all of these occurrences, we must say again, constitute a segmental functioning of the organism in response to specific stimuli objects, situations, etc. Here it is of importance to note that the mentalistic and organismic definitions of stimulus, response, adjustment, etc., vary tremendously in essential details.

what particular functions they perform (and the same holds true for the nerves, glands, etc.), is a matter concerning speaking rather than striking or some other action, a matter of speaking English or some other language, a matter of verbal speech rather than, or in addition to, nonverbal gestural language, a matter of whether one speaks to a loved or hated one, a respected or worshipped one, a matter of what one is talking about and who else is present besides the original person with whom one is speaking, etc. Simply put again, it is a matter of acquiring one specific reaction system or a set of specific reaction systems to specific stimuli situations. In each case the study of the particular situation would be greatly advantaged and in the long run must absolutely be reinforced by a fundamental study of the functioning of the neural mechanisms, muscular and glandular mechanisms, the perceptual, affective and other components. Here of course the coöperation of the physiologist, physicist, anatomist and other scientists must be sought and encouraged. But in no case may we shift the psychological problem from the response of an organism to a stimulus, to the interaction of the neural system with some other system or systems.

Naturally enough, the neural physiologist who specializes in the study of the functions of the nervous apparatus will overemphasize the coöordinating functions of that system, and in this way finally lands in the predicament of considering the neural functions as the causes of other functions. He may even call the neural systems the "master tissues," but all of this does not mislead us from the fact that such an expert is overemphasizing the importance of one coöordinate phase of a total unitary biological happening.<sup>11</sup>

Have we minimized the importance of the nervous system? In our opinion not in the slightest. We have merely placed it in its proper perspective as an intricate coöordinating mechanism serving remarkable integrational functions. As I have suggested elsewhere, not until we study the neural functions as factors in the complex or unit of action (response) in which they operate, will we understand them and their importance. Never can we understand neural mechanisms by making them into surrogates for, or aspects of, "psychic" or "mental" occurrences or events. When we think of the neural phase of a unitary act performed in coöordination with a

<sup>11</sup> Let us not overlook the unfortunate influence upon neural physiologists of traditional psychological (mentalistic) conceptions.

stimulus no necessity exists for such an overemphasis of one phase over all the others.

Professor Warren in referring to the necessity for describing how stimuli operate asserts that if we trace back the sequence of events, step by step, at every point we seem to require definite physiological antecedents, or some adequate substitute therefor, to account for the effect produced. To this statement we take hearty exception. We cannot agree that there exists in any psychological situation the need to discuss physiological antecedents. Physiological antecedents of what, we may ask. Such a need, we may remark, can arise only when we are dealing with a spiritualistic psychology. It is only in such a psychology, moreover, that the need exists to commit the methodological error of reducing psychological data to some other kind. In the organismic psychology no such substitution of occurrences for occurrences is necessary or desirable.<sup>12</sup> Naturally enough since the reactions of persons or animals constitute not exclusively psychological phenomena but physical, anatomical and cultural as well, any particular scientist interested in psychological organisms, in order to understand most thoroughly and most broadly the common phenomena, must get the results of his scientific colleagues, but this never means that one type of fact is more fundamental or basic. As a student of scientific methodology it seems to me that the conception of a hierarchy of sciences is essentially fallacious and inevitably leads to, if indeed it is not utilized for, the introduction of illegitimate propositions into one's descriptions and explanations.

<sup>12</sup> This substitution Professor Warren brings about under the plea of exact analysis and definiteness of description (*PSYCHOL. BULL.*, 20, 441), although he says elsewhere (*Human Psychology*, p. 90, 123, et passim) that physiology does not give us the solution of the problems of psychology. But this probably does not strike Professor Warren since he does not recognize any difference between the nervous function and consciousness or mentality. Thus he speaks of direct observation of neural impulses (*Human Psychology*, 134, 149, 223, etc.). To the writer it seems that such work as the following on experimental localization, clinical diagnosis of aphasia, and clinical reeducation make very definite the view of organismic stimulus and response. Cf. Head, Aphasia and Kindred Disorders of Speech, *Brain*, 1920, 43, 87; Oden and Franz, On Cerebral Motor Control, *Psychobiology*, 1917, 1, 33; Cerebral Mental Relations, *Psychol. Rev.*, 1921, 28, 81, etc.; Brown and Sherrington, Note on the Functions of the Cortex Cerebri, *J. of Physiology*, 1913, 46, XXII; Leyton and Sherrington, Observations on the Excitable Cortex of the Chimpanzee, etc., *Quart. J. of Exp. Physiology*, 1917, 11, 135; Brown and Stewart, On Disturbance of Localization, etc., *Brain*, 1916, 39, 348; also, references in papers referred to, etc., etc.

How Professor Warren's own psychological bias influences him to give different meaning to my descriptions of psychological phenomena than I intend, is excellently illustrated by his criticism of my use of the terms adaptive and need. He questions the propriety of saying that every psychological action is adaptive in the sense that it makes for the improvement of the condition of the organism. Not only do I not intend any such assertion, but I do not believe that the term adaptation in the sense of improvement is especially a psychological category. In my various uses of the term adaptation and especially in the sentence to which Professor Warren refers, the term merely means the later operation of a reaction system in connection with a stimulus with which it has previously become connected. Adaptation merely means, then, that I say "yes" when someone asks me if I will do something, even though my answer involves me in difficulties which may mean the loss of all my worldly goods or my life. According to my view the moth flying into the arc-light does very efficiently adapt itself to its stimuli.<sup>13</sup> The writer freely admits, however, that there has not been sufficient care exercised either by myself or others in distinguishing between the large variety of reactions.<sup>14</sup>

Similarly, to interpret my term need as a mental term, as when Professor Warren says, "nor is it one whit more satisfactory to describe the adjustment wholly in mental terms—to say that the response occurs because it is 'needed,'" (*PSYCHOL. BULL.*, 20, p. 442) is to give it a meaning which is utterly impossible for me. As a matter of fact my use of the term does not even imply a non-mentalistic or behavioristic psychological fact or condition. It may be an economic circumstance, or physical condition which operates as a stimulus to bring about some result. That is to say, when I need to write a certain word on the typewriter the presence of the word that I need to write and the need (economic, professional, moral, etc.), constitute the stimuli for using certain muscles and using them in a particular way, that is to say, for performing a particular reaction. In some cases, of course, the need may be a psychological fact but that certainly cannot mean for me any kind of "mental" fact.

At more than one point in his discussion Professor Warren raises

<sup>13</sup> But not to its environment if we believe that it should remain undestroyed, a questionable belief indeed from a scientific standpoint.

<sup>14</sup> Such distinctions the writer has attempted to make between reactions, responses, adjustments, adaptations, etc., but as yet this work has not reached the stage of publication.

the fundamental methodological problem of the hypothesis. He asserts in essence that every scientist must and does formulate or accept hypotheses as explanations and descriptions of facts which in themselves are not at the time amenable to direct observation and description. The writer knows of no one who does not accept this proposition. But the question really is whether psychological facts include hidden, "intervening processes" between the stimulus and response, or inside the response. It is my opinion that Professor Warren uses the causal character of the nervous system as an hypothesis, not, mark you, to explain some facts but rather to supply for some that do not exist. For we firmly believe that when we wish to speak of the cause of a psychological fact (reaction) that cause must be a stimulus object or situation and not the nervous mechanisms, which, be it remembered, are considered causal and determining only because they are regarded as mentalities.

Whenever serious disagreements arise between workers in the same field of science we inevitably are struck with the natural but unfortunate, truth that after all we cannot always agree upon what are and what are not observable facts. Moreover, another truth is constantly forced upon us, namely, that what are accepted as facts at one period of scientific development, at another period lose all claim to such distinction. For these reasons it is indeed fortunate that in this particular problem of the nervous system we can trace out certain traditional influences which operate in connection with the mentalistic conception. To the writer it seems that this traditional connection casts more than a shadow of doubt upon that interpretation. And so with a full appreciation that there are no infallible observers or absolutely inerrant scientific methods, and further, that phenomena themselves so far as we can grasp them are not fixed or absolute, the writer still believes that the weight of evidence, both factual and interpretative, inclines in the direction of the organismic and not the mentalistic interpretation of the nervous mechanisms as factors of psychological activities.

## REPLY TO DR. KANTOR

Professor Kantor has turned the tables neatly. The very title of his DISCUSSION shows that I have failed to make clear—to one able analyst at least—the basal principles of our science as I understand them. In point of fact my conception of psychology is by no means “mentalistic”—it merely generalizes the accepted laws of the physico-chemical sciences.

Like Dr. Kantor, I believe that “psychology deals with the activities of persons and animals, namely, their responses to objects functioning as stimuli”;<sup>1</sup> or more broadly, with the responsive activi-

<sup>1</sup> Supra, paragraph 5.

ties of all organisms. Our chief interest as psychologists, I believe, is to discover the manner in which these responses are brought about—the mechanism of the process. Thus when we investigate organic behavior it devolves upon us to study not merely the stimuli which start the activity but also the various intra-organic processes which follow the stimulation and determine the character of the response. And these, the physiologists assure us, are chemical and physical activities.

Some of the internal doings appear to be far more significant than others in determining the responses. In reacting to a visual stimulus, the activity of the optic nerve seems peculiarly significant. When that nerve is severed, the usual response fails. Likewise, when certain regions of the brain are impaired, the response may be lacking or inappropriate. Such facts as these indicate, to many of us, that the “neural mechanism” plays an extremely important rôle in behavior—and under the term *neural mechanism* we include both the topographical arrangement of the nervous system and the physiological processes that take place in this nervous structure. We grant that the bones, blood, glands, and other constituents of the body influence the response; yet their contribution to the total seems relatively subordinate. But whether he is studying the neural or other factors, the investigator, we believe, is concerned above all to discover what physical and chemical processes are involved—in other words, the actual mode of operation by which the response is brought about.

So far, then, from being "mentalistic," the attitude which we take toward psychology is fundamentally "mechanistic." It aims to bring psychology into line with the other sciences.

The "double-aspect" hypothesis has the same end in view. It is an attempt to bring two apparently separate sets of phenomena under a single formulation, just as Newton's gravitation hypothesis sought to bring together the revolving planet and the falling apple. All new hypotheses dealing with fundamental principles appear strange and perhaps uncanny to those accustomed to think in different terms. But they should not on that account be dismissed at once as magical or mystical. The real question is, Do they fit the facts? Empirical evidence alone will furnish the satisfactory answer.

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## SPECIAL REVIEWS

*Wilhelm Wundt, Eine Würdigung.* Im Auftrage der Deutschen Philosophischen Gesellschaft, herausgegeben von Arthur Hoffmann. Erfurt: Keyser, 1922. Pp. 124.

This "appreciation" will probably be welcomed as an interesting souvenir by those who have had personal relations to Wundt and by those who still regard him as an epoch-making figure. But little reason for its publication will be seen by those who regard Wundt as playing in the history of science only the rôle of an astonishingly industrious and mainly for this reason during his time highly respected plodder. The present writer is willing to risk his own reputation by making the confession that he counts himself among the latter. Having never met Wundt, he feels that those who have, have become somewhat hypnotized by his personality.

The first and most lengthy part of the appreciation is written by Felix Krueger under the title "Wilhelm Wundt als deutscher Denker." Wundt did not believe in international fraternizing. He believed that such fraternizing could only result in "German idealism being overpowered by Western-European individualism" and did his best to "save" German idealism and German science. This is the quintessence of Krueger's article of 44 pages.

Peter Petersen then tells us in a briefer article that the work of Plato, Leibniz and Hegel, the erection of the palace of idealism, was completed by Wundt and left by him, not to mankind, but (p. 55) "dem deutschen Volke."

Friedrich Sander tells us what Wundt meant by his "principle of creative synthesis." August Kirschmann convinces us that Wundt's doctrine of "relativity" is not only very different from that of Einstein, but also very superior to it; and that the physics of the future will have to take into account "the fundamental psychical facts of continuity and freedom." Hans Völkelt on 32 pages gives us a history of Wundt's *Völkerpsychologie* (term invented by the Herbartian philosopher Lazarus in 1851). Only Wundt succeeded in expelling from the *Völkerpsychologie* the foreign elements belonging to the metaphysics of history and of sociology and in making the

Völkerpsychologie "a pure psychological science." Otto Klemm gives us on three pages a history of the Psychological Institute of Leipzig. A photographic reproduction of the Wundt bust by Felix Pfeifer accompanies the collection. The original sculpture seems to be a valuable piece of art, but the photograph has certain unfortunate features which are apt to become suggestive of a caricature.

MAX F. MEYER

HUNTER, W. S. *General Psychology*. (Rev. Ed.) Chicago: Univ. Press, 1923. Pp. xv+368.

The revised edition even more than the first edition emphasizes that feature of this book which in the reviewer's judgment makes it especially valuable, its encyclopedic nature. There are few phases of contemporaneous psychological literature which are not at least briefly touched upon. Although the objective side of psychology is given preference over the subjective one, the "explanatory" endeavor of the book, wherever it goes to any considerable depth, tends in the direction of the subjective rather than the objective side. Maybe the author is not quite aware of that—or, if he is, he will justify his subjective terminology (in words similar to those used by Goethe's Faust: "Zwei Seelen wohnen, ach, in meiner Brust") by the following quotation from the preface: "In some places whole topics have been eliminated where they have seemed either too technical or too controversial. Some topics which are left I could see *spurlos versenkt* without regret because of their apparent sterility for the advancement of the science. They are present, however, out of deference to what seems to be the major opinion of contemporary psychologists. After all, since psychology is a social institution with a history which can only be gradually outgrown, a textbook should be conservative."

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BRIERLEY, S. S. *An Introduction to Psychology*. New York: Dodd, Mead, 1923. Pp. 152.

"This book has been written to meet the first needs of nonprofessional students of psychology, and particularly of those who take up the subject in classes organized by the Workers' Educational Association. Its structure is the outcome of several years' discussion with such students." The above words quoted from the preface say

virtually everything that is to be said of the book in a review. It is eclectic. It omits nothing that is customarily found in such a book; and it adds nothing which might to any psychologist appear new or startling. It is well written and well printed. It will make a good impression upon the general reader and probably hold his attention.

MAX F. MEYER

HUMPHREY, G. *The Story of Man's Mind*. Boston: Small, Maynard, 1923. Pp. ix+302.

The publisher says of this book that "the psychology of business, home, and school, with its thousand uses and applications is here explained for everyone." The last word of this quotation should be emphasized. The book is written for "everyone." It is not a textbook—no more a textbook of applied than of general psychology. It consists of fourteen chapters which might have been published serially in a popular periodical like the *Saturday Evening Post*. The author tells, as the cover announces, "how to train the baby, what dreams mean, what advertisements appeal, why we shiver in a hot bath, why a child fears the dark, why we have dislikes, what psychoanalysis is, how to cure insomnia, why we love, how we remember, etc." As a popular book talking "about" psychology and psychologists, it deserves great praise.

MAX F. MEYER

MOORE, J. S. *The Foundations of Psychology*. Princeton: Univ. Press, 1921. Pp. xix+239.

The author finds too little interest among psychologists in the "foundation principles" of their science; we have not "one science of psychology but many," each having aims and ideals inharmonious with all the rest; he therefore proposes to examine the "diverse but perfectly harmonizable" conceptions now current, and from them piece together a coherent system (pp. 1-3). This eclectic procedure is followed throughout the book; different views are assembled, examined and then "reconciled." His "thesis" (p. 2) is: (1) that a complete science of psychology is possible, which shall be independent alike of metaphysics on the one hand and of the biological sciences on the other; (2) that its distinctive method is introspection and that this method is really scientific; and (3) that it is founded on certain essential postulates to be given below.

After a brief historical review, some concepts of modern scientific

psychology are examined. (1) *Points of View.* Every experience may be viewed as a content (e.g., the concept) or as a process (thinking). Thence arise the two methods, structural and functional, the first being especially concerned with describing and classifying the facts of consciousness, the second being most useful in explaining them (p. 117). Self-psychology and behaviorism are both developments of functionalism, but in opposed directions (p. 85). A comprehensive view of human life must regard overt activity (behaviorism) as well as consciousness (p. 56), but psychology, the science of consciousness, should be kept clean of "praxiology," the science of behavior (pp. 58-60). (2) *Introspection*, the distinctive method of psychology, consists in "reflecting upon one's experience" (p. 43). It differs from ordinary observation only in point of view (Pillsbury). Although essentially an individual method, conclusions of general validity can be attained by collating different observers' results (p. 51). While it alters the facts to be studied, so also does any observation of external phenomena (Scripture). In the case of an electrical machine, for example, "if I wish to carefully observe the construction of the machine, I must neglect the spark; . . . Likewise if I observe a memory, I overlook an emotion" and so give a distorted account of the former (p. 50). While it is the central and distinctive method of our science, introspection is by no means all-sufficient, and needs to be supplemented with observations of behavior (p. 54). (3) *Psychology vs. Metaphysics.* Like any science, psychology must describe mental phenomena and explain them in terms of known or hypothesized causal factors; metaphysics, on the contrary, must interpret or evaluate the facts, find to what end or purpose they exist. Since we live in a world of values, the psychological study of our experience is sure to be artificial and abstract. The true personality is a system of purposes; "our various acts, feelings and thoughts are . . . teleologically, not causally, interconnected" (p. 112); "the historian and littérateur understand human nature as it really is far better than the psychologist because they approach it from the purposive rather than the causal point of view" (p. 119). Hence the psychological study of man must be supplemented from the "teleological sciences," history and philosophy. (4) *Psychology vs. the Material Sciences.* The "inner-sense" theory (that psychology differs from material science in having a separate organ and sphere of experience—inner vs. outer) is rejected in favor of the "immediate experience" theory of Wundt (that natural science

deals with the same material as psychology, but considers it apart from the experiencing subject). Mental facts thus differ from material primarily in that they are non-spatial and private.

Our science rests, according to Moore, upon four necessary postulates: (1) existence of a material world; (2) existence of consciousness; (3) interrelation of consciousness with this material world; (4) uniformity of mental life—given like conditions, like mental results will follow (pp. 159 ff.). The fourth of these broaches the problem of mental causality. Merely to correlate mental with cerebral processes is to admit that causal explanation in our field is impossible, while to say that the latter produce the former is to make our field a mere dependency of physiology (pp. 176 f.). In order, therefore, to "save" our science, he accepts the doctrine of independent psychic causality, despite the grave difficulty of psychic discontinuity. Physical changes seem to form a continuous nexus of energy transformations, whereas conscious sequences are inherently transitory, begin and end at definite points. He meets this difficulty in two ways: (1) in so far as a given mental sequence, like sensation, depends upon some physical stimulus, it is simply an ultimate datum, to which no cause can be assigned (p. 182); (2) in so far as this mental sequence depends upon previous ones, it is accounted for by their persistence in the *subconscious*, which provides the continuity lacking in conscious life (p. 185). The whole mental content thus consists of a central region (attentive consciousness), a marginal region (subattentive consciousness) and an ultra-marginal region (subconsciousness) (p. 206).

The reviewer has little in common with the author's point of view and dissents from many of his conclusions; but the treatment moves within conventional boundaries, and the relevant arguments, pro and con, are so well known as to make rebuttal superfluous. Just one point may be considered. We are told that psychology has nothing to do with meaning, purpose or value; that philosophy alone is concerned with interpreting facts, with discovering the purposes or ends which they serve, and with evaluating their utility, beauty and eternal significance (p. 97). (One may be permitted to wonder what such a phrase as "eternal significance" means!) Titchener, to whom the author appeals in this connection, says that meaning, in the language of science, equals "context" (*Beginner's Psychology*, pp. 117 ff.). Mr. Moore believes, however, that "logically and metaphysically meaning is much more than psychological context"; the

"true" (*i.e.*, metaphysical) meaning of a percept, for example, is its reference to the "real" object; this object not being in the mind, the reference to it cannot be a psychological datum(?) and is merely represented in the mind by certain contextual images (pp. 103 f.).

In speaking of this matter, we may find it useful to distinguish process from product (the act of interpreting, from the meaning which emerges; the act of evaluating, from the value which results); bearing always in mind that product is merely the final term in process, just as a percept is the culmination of perceiving. As for processes of this kind, the reviewer maintains that they are psychological questions pure and simple, as important as they are complex. We may as yet know all too little about them, but we cannot therefore bow them over to metaphysics. To attach meaning or value, to formulate ends, are among the ways in which a given organism reacts to the world it lives in; they might, in the manner of Woodworth (*Psychology*, p. 123), be called reactions of second or higher order, as compared with simple sensory ones; and such response-clusters, because of their associative or affective complexity, are among the very components of experience which most need to be resolved and explained. The products themselves (values, meanings or ends), considered apart from the processes by which they arise, are, likewise, no mere grist for metaphysics; they are the crude data for sciences distinct from psychology but footing upon it. A simple analogy will make their status clear. The raw materials of chemistry, for example, are composed of percepts; when we say that oxygen and hydrogen combine into water, we mean, crudely stated, that percept A and percept B, in certain time- and space-relations, are followed by percept C (water). To study these percepts and formulate laws summarizing their relations to each other, is, however, the business of chemistry, not of psychology; even though the perceiving process is a psychological problem through and through. In like manner we may have true sciences dealing with values, with meanings, and with ends, each based upon psychology but distinct from it.

In any event, the facts of this field, as everywhere else, must be handled by the "artificial" and "incomplete" (p. 98) methods of science, if they are to be understood at all. The history of thought shows well enough how metaphysics has clung to one province of knowledge after another until dispossessed by experimental science; it is time she were evicted here. It needs to be more generally recognized that the metaphysical treatment of a subject is of value, not

for what it says about "reality" or "ends," but only for the light it throws upon the psychological mechanisms whence it sprang. It reveals some individual's mode of adjusting and unifying his responses under the impact of life; therein lies what value it has for the world of knowledge—a world which belongs under the sole dominion of science.

Whatever its defects, the volume before us offers the student a convenient survey of fundamental problems in our field, together with proposed solutions and arguments bearing upon them. To anyone looking for a survey of this kind, the book may be definitely recommended.

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1. WILLIAMS, J. M. *Principles of Social Psychology*. New York: Knopf, 1922. Pp. xii+459. \$5.00.
2. GINSBERG, M. *The Psychology of Society*. London: Methuen, 1921. Pp. xvi+174. 6s.
3. PARK, R. E., & BURGESS, E. W. *An Introduction to the Science of Sociology*. Chicago: Univ. Press, 1921. Pp. xxi+1040. \$4.50.

Renewed interest in social psychology is shown by the publications of the last two years. The above three books testify in their own way to this, and each makes some contribution. Professor Williams' book is scarcely to be understood unless we read the subtitle, "As Developed in a Study of Economic and Social Conflict." "A Psychological Study of Social Conflicts" would have been a much more accurate title than "Principles of Social Psychology." To be sure, it contains "principles," but it covers only a small section of the field of collective behavior. This is indicated by Professor Williams himself in his previous volume, *The Foundations of Social Science*, in the preface of which he announces his intention to publish no less than six books in the field of social psychology. Apparently the present work corresponds to the third book announced.

If judged by itself one would have to say that Professor Williams accepts a "conflict theory" of social relations. While the book opens with a chapter on "Disposition, Impulse, and Habit," it at once turns to the play and interplay of the instinctive impulses shown in rivalry, domination, fear, submission, and conformity in economic, political, domestic, cultural, and educational relations. The theme of the

book is the conflict of interests in all of these various fields and the results of such conflict as shown by existing social arrangements. There is no indication that Professor Williams regards conflict as a relatively abnormal element in the social life, marking the failure in social adjustment, nor any indication that it is just as valid to view human society as a coöperative process as it is to view it as a process of conflict. To be sure, Professor Williams does not exalt conflict as an ideal, but rather indicates that his ideal is coöperation. The point is, however, that he starts with conflict as original. He seems to have back of his psychology an ultra-Darwinian view of the life process, to which he has added the modern psychological doctrine of instinct and the Freudian doctrine of the social reactions of suppressed impulses. It is questionable whether the trend of modern biology and psychology justifies such a "conflict view" of the social process.

But there is a deeper criticism still to be made of Professor Williams' book. While the book shows the utmost scholarship and erudition, yet the author seems unconscious of the recent revolutionary work done in social psychology by such men as Kantor, Ogburn, and the cultural anthropologists. In a word, the book does not stress the institutional and cultural approach to the problems of social psychology. But it is becoming more and more evident that this is the only sound approach. Professor Williams says little about the cultural and institutional setting of the conflicts which he discusses. Most sociologists and anthropologists, however, would regard culture and institutions as more important in these conflicts than instinctive impulses. Finally, one must question whether the author does not give much more weight to instinctive impulses, such as rivalry, domination, fear, and submission, in these processes of conflict, than scientific investigation warrants. There is no such careful balancing by Professor Williams of the instinctive and the cultural elements in his problems as is found, for example, in such a book as Ogburn's *Social Change*.

Mr. Ginsberg's book is much less ambitious than Professor Williams', despite the breadth of its title. It is a discussion of instinct in society in relation to reason and will, on the one hand, and to tradition and institutions, on the other. While, like Professor Williams' book, it does not make the concept of "culture" fundamental, or utilize the cultural approach, yet by emphasizing the part played by traditions, customs, and institutions in social life, it

approximates this. The treatment of instinct as a factor in social problems is, therefore, very guarded and avoids the exaggerations which we find in such writers as Trotter and Carlton Parker. Mr. Ginsberg, who is a lecturer on philosophy in University College, London, sums up his conclusions in the following way: "1. Human behavior exhibits characteristics which make it biologically continuous with animal behavior. 2. The basis of human character is largely hereditary. In other words, our interests are largely determined by those basic feelings of tension which constitute the core of the instincts. 3. But (a) the hereditary tendencies are not self-subsistent but determine and modify one another so that they appear in man in a fused, truncated, and aborted form. (b) While the hereditary basis is permanent, the ways in which the instincts manifest themselves will vary enormously according to circumstances. If we designate the force of tradition, convention, etc., by the term social heredity, and the force of instinct biological heredity, we may say that to explain any particular line of conduct we need to know the precise effect of each of these in interaction with the line of experience of the individual or group of individuals whose conduct is in question."

Professors Park and Burgess' book is much more comprehensive than either of the above. It is a textbook dealing with the whole field of social behavior, social organization, and social change. The bulk of the book is made up of a selection of readings to illustrate the concepts and principles of sociology. The authors approach their subject from the standpoint of psychology, discussing first, human nature, then society and the group, then such subjects as isolation, social contacts, competition, conflict, assimilation, social control, collective behavior, and progress. Each chapter has an introduction by the authors and a concluding discussion of "Investigations and Problems." The portions of the book contributed by the authors are usually very suggestive and of great value. The same cannot be said of the more than one hundred selections from articles and books which make up the bulk of the work. None of these selections are taken from standard textbooks in psychology or sociology. Hence, they represent in many cases "current literature" rather than the most mature work of scientific men, and produce the effect of a miscellany rather than of a systematized treatise. It is a question whether textbooks organized on this plan of "selected readings" deserve the popularity which are at present accorded to them. The

book may also be criticized as not emphasizing enough the cultural approach and the approach through primary group life to the problems of which it treats. To be sure, its authors have devoted sections to the discussion both of "culture" and of "primary groups." But neither the concept of the primary group nor the concept of culture dominate the treatment of the problems which they discuss. If the reviewer is not mistaken, however, the approach to the problems of the psychology of human society (which is the main part of sociology) is going to be more and more in the future an approach through the study of culture, in the anthropological sense, and of primary group life.

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DAVENPORT, F. I. *Adolescent Interests: A Study of the Sexual Interests and Knowledge of Young Women.* (*Arch. of Psychol.*, No. 66.) New York, 1923. Pp. 62.

This study was undertaken to determine the sexual interests of a group of young women (from seventeen to twenty-four years of age). It is the kind of study that is much needed for even larger groups, because we lack information of the extent of sexual interests, and of casually obtained sexual knowledge, upon which must be built sound sex education. Propagandists have hitherto held the field undisputed, and upon presuppositions and prejudices have built an elaborate but flimsy structure with guessing bricks and bigoted mortar. It is time that assumptions be tested by the accumulation of facts, and that a sound educational policy and educational methods of putting across a sane sexual hygiene program be based upon what people generally learn through companions, and upon the recognized interests of groups of adolescents and adults. The author suggests an extension of her study to another group of young women, and to a group of young men. The reviewer would suggest further extensions to adults, both men and women, because it is apparent that sex ignorance and superstition do not disappear with age, and, in some respects, not with sex experiences. To all who have interest in this important phase of life the monograph is recommended for close study. The topics are too numerous to be detailed in a review. It must be read to be thoroughly appreciated.

SHEPHERD IVORY FRANZ

COLUMBIA ASSOCIATES IN PHILOSOPHY (L. BUERMAYER; W. F. COOLEY; J. J. COSS; H. L. FRIESS; J. GUTMAN; T. MUNRO; H. PETERSON; J. H. RANDALL, JR.; H. W. SCHNEIDER). *An Introduction to Reflective Thinking*. Boston: Houghton Mifflin, 1923. Pp. 350.

In the main, this work fulfills the promise of its title. It contains chapters on nearly all the familiar subjects of the logic textbook, but the authors have deliberately discarded the formal way in which the material of the traditional logic has been presented, and have succeeded in presenting much the same material in an exceedingly concrete setting. The discussion is always made vivid and kept close to life by being centered about a definite intellectual problem. For example, a typical case of diagnosis by the Massachusetts General Hospital, as contrasted with the diagnostic practices of Egyptian doctors, serves to bring out the principles of correct observation and classification. A similar comparison between the Copernican and the Ptolemaic astronomies makes clear the nature and rôle of scientific hypotheses, and the sort of proof of which they are susceptible. Mill's familiar experimental methods are found tucked away in footnotes to a description of Pasteur's investigations into the origins of living beings. The essential character of mathematical thinking is strikingly revealed by a careful study of the Pythagorean theorem and its proof. An examination of the contrast between the explanation of heat given by the kinetic theory and that given by scholastic philosophy forms a background for the discussion of what constitutes a scientific "explanation." The theory of evolution, as an illustration of all the scientific methods, is examined in detail. In addition to the subjects usually dealt with by the textbook in logic, the authors have included a number of others. The principles of reflective thinking in the field of history are illustrated by an examination of the newer critical conception of the Pentateuch. The chapter on reflective thinking in law is an admirable presentation of the problems and conditions of legal thinking; and here again the discussion is kept concrete by being based upon the analysis of an actual judicial decision. Each chapter is supplied with a list of suggested questions and a bibliography: the book is frankly a textbook, and a very interesting one.

In view of the high level of some of the chapters a protest might be made against the singularly inadequate treatment of statistical methods (if indeed this is the subject of the chapter in question),

as well as against its position in the order of the chapters. Statistical methods surely are recognized tools of scientific observation, and are no more to be classed with discussions of value than are the five experimental methods.

Many persons, moreover, to whom "reflective" thought means a great deal more than the solving of practical problems, will regard as unfortunate the intrusion of pragmatist theory. If the authors had a pragmatic philosophy to impose upon the student or the reader they have certainly not taken advantage of all the opportunities afforded them. They have deliberately declined to go into the ultimate questions of the nature, extent, and validity of knowledge, and the exposition of the methods of scientific thought is for the most part admirably objective. All the more unfortunate, therefore, is the attempt in the introduction to hitch up the material in the book to a pragmatic theory of thought. If there was any place in this book for such an attempt, it was assuredly at the end of the inquiry, not at the beginning; and one is inclined to think that its presence anywhere decidedly curtails the usefulness of the volume.

GLENN R. MORROW

UNIVERSITY OF MISSOURI

BUCKE, R. M. *Cosmic Consciousness, A Study in the Evolution of the Human Mind.* (4th ed. corrected.) New York: Dutton, 1923. Pp. xviii+384.

By some, though not by the reviewer, this book is regarded as a contribution to psychology. William James is quoted as having written to the author: "It is an addition to psychology of first rate importance." The author asserts that what he calls Simple Consciousness is possessed by the upper half of the animal kingdom, that man has another which is called Self Consciousness, and that a few men have possessed Cosmic Consciousness, a third and higher form. Among these few is the author, who admits that he has attained to at least a bit of this third and highest. The book gives the life histories of some four dozen historical personalities making up the list of these few.

"From Gautama to Dante we count eighteen hundred years, within which period we have five cases," including Jesus, Paul, Plotinus, Mohammed. There are nine specific reasons for believing that Gautama was a case of Cosmic Consciousness (p. 89), one of them being that he attained illumination at the typical age for the

oncoming of the Cosmic Sense—thirty-five years. One reason for believing that Dante had the Cosmic Consciousness, is the fact that Balzac said so, and Balzac himself had the Cosmic Consciousness. That Shakespeare had it follows from the fact that Francis Bacon had it; and Shakespeare and Bacon are known to be the same man.

In 1877 the author called on Walt Whitman. "Whitman only spoke to him about a hundred words altogether, and these quite ordinary and commonplace." But shortly after leaving a state of mental exaltation set in and told the author that Whitman had the Cosmic Consciousness. The mosquitoes would settle upon Whitman in large numbers, but did not appear to bite him, while driving the rest of the party almost wild (p. 263). "Many readers, before they have reached this page (365), will have been struck by the fact that the name of no woman is included in the list of so-called great cases, and the names of only three in that of lesser, imperfect and doubtful instances." On the last page we are told that "Cosmic Consciousness will become more and more universal and appear earlier in the individual life until the race at large will possess this faculty."

MAX F. MEYER

RIVERS, W. H. R. *Conflict and Dream*. New York: Harcourt, Brace, 1923. Pp. xi+195.

RIVERS, W. H. R. *Psychology and Politics*. New York: Harcourt, Brace, 1923. Pp. vii+181.

At the onset of the war Dr. Rivers was engaged in ethnological pursuits, and these were succeeded by work with the war neuroses. His renewed interest in psychological problems deepened and continued until his death in June, 1922. Some forty publications made during this period testify to his interest. *Conflict and Dream* and *Psychology and Politics* are posthumous books, and are unfortunately without the final revision of the author. Both contain numerous references to his previous work, *Instinct and the Unconscious*, which, if possible, should be read first.

Psychoanalysis has been fortunate in attracting a friendly critic with the broad interests, learning, independence and scientific training of Dr. Rivers. He shared the belief that psychoanalytic principles threw much light on the problem of the war neuroses, but, among other things, he became dissatisfied with the Freudian explanation of dreams, particularly personal and battle-dreams. His views are brought together in *Conflict and Dream*. Accepting the distinction

between the manifest and latent contents of the dream, Dr. Rivers believes: (1) that "dreams are attempts to solve in sleep conflicts of the waking life" (p. 81); (2) that these conflicts have to do with recent experience; (3) that all dreams represent regressions and vary according to the depth of sleep, the deeper the sleep, the more infantile the mental functioning; (4) that the affective character of a dream (as of a psychoneurosis) depends on the degree of solution of the conflict, the more incomplete the solution, the more intense and painful the affective accompaniment.

Dr. Rivers' conception of dreams is analogous to his explanation of psychoses and psychoneuroses (*Instinct and the Unconscious*) as attempts at conflict-solution, and attempts in which the mechanism of regression, in varying degrees, is seen. Probably mental conflict is at the bottom of every psychogenic mental and nervous disorder; but this statement does not greatly clarify the situation any more than a deduction of physical conflict made from the sight of a black eye. The main interest concerns the nature of the conflicting forces, and the cause and setting of the conflict. To a Freudian, the wish, and a particular wish, furnishes part of the conflict. Dr. Rivers anticipates this so: "It is a question, however, whether all wishes do not imply some degree of conflict. There would be no occasion for a wish if there were not an obstacle of some kind to the attainment of the end to which the wish is directed. It is possible to speak of a dream as determined either by a wish or a conflict, and my objection to Freud is not so much to his expression of the purpose of a dream in terms of desire as to his view that dreams are necessarily the fulfilment of desire" (p. 163). We will leave this temporarily.

Freud's conception of protective censorship is rejected by Dr. Rivers, who believes "that the character of the dream, and especially its apparently fantastic and grotesque features (the author prefers the term "transformation" to distortion), are due to the fact that it is an expression of early modes of mental functioning which have been allowed to come into action, owing to the removal of higher restraining influences derived from the experience of later life" (p. 92). Sleep causes such a removal and "acts progressively upon successive levels of mental activity, first putting out of action the experience and modes of mental functioning which have been recently acquired" (p. 92). Dr. Rivers has compared these successive levels of experience, more or less blended (with the exception of the unconscious), to the conception of levels of neurological activity, first

formulated by Hughlings Jackson. Infantile modes of functioning rather than infantile experience are seen in the dream; but Freud has modified considerably his earlier emphasis on the latter. Dr. Rivers subscribes to Freud's view that affect may be present in the latent dream content when it is not in evidence in the manifest content (but not *vice versa*), and that "transformation" (distortion) tends to lessen the affective display. But he does not believe that this lessening is due to the censorship; instead, that the affect is related to earlier modes of functioning, that its absence or excess is appropriate for the level regressed to, and active in the dream.

The battle-dreams of the war neuroses were of particular interest to Dr. Rivers, and it was here that he found the wish-fulfilment theory especially inapplicable. "So far as desire enters into causation, the dream is the direct negation of a wish, the wish not to be subjected to the repetition of a painful experience, the wish leading to a process of repression in the waking life which in its turn produces the dream in sleep" (p. 68). (Dr. Rivers uses the terms repression and suppression in a sense reversed from that understood by psychoanalysis: that is, for him, experience becomes unconscious by suppression, an "unwitting" process; while repression is the "witting" means of expelling experience from consciousness.) Inasmuch as these battle-dreams were composed largely of recent experience of the dreamer, they would not seem to bear out one of the author's main contentions, *i.e.*, that in sleep levels of experience are affected more or less chronologically and earlier modes of mental functioning are mainly active. He meets this objection with agility, however, by invoking the selective attention of sleep and broadening his formulation by stating that regression applies only to the general character of a dream, and that recent experience connected with the conflict may continue active. This gives him further opportunity to protest against the prevalent relative minimizing by psychoanalysts of the manifest content of the dream. It is interesting that Freud in his recent book, *Beyond the Pleasure Principle*, considers particularly the battle-dream, and makes his first concession to the criticism of wish-fulfilment in explaining this type of dream by the conception of "compulsion repetitions." Probably conscious repression (suppression) was a large factor in the mechanism of these battle-dreams, and Dr. Rivers recognizes this. It may be that such a simple explanation is sufficient. At any rate, there was no doubt about the surprising therapeutic benefit that fol-

lowed a ventilation and mental digestion of the affect-charged battle experiences.

In the study of his own dreams Dr. Rivers utilizes a personal tendency to think, more or less unwittingly, about the dream in the half-waking state that succeeds sleep. (He adds that many of his scientific ideas were conceived during this period.) "The assumption upon which my method depends is that the latent thoughts which have determined the nature of a dream during sleep continue to be active on awaking, especially when this waking is only partial, and that the period between sleeping and waking provides the fittest opportunity for the discovery of these thoughts" (p. 64). Where this method is applicable, Dr. Rivers believes it to be superior to free association, which, although he uses it and acknowledges its practical value, is criticized from a scientific point of view because of its assumptions, particularly concerning determinism. The dream analyses recorded are interesting but not entirely convincing. The author agrees that sexual conflicts are probably the most frequent sources of dreams, but he properly denies their universal presence and says, "any conflict which is capable of disturbing the even tenor of Man's life may serve as the motive of a dream" (p. 150). The analyses go to prove his contention, but in at least one of his patients' dreams there is a cursory dismissal of seemingly important sexual content (p. 24).

Dr. Rivers is unwilling to accept the views of either Freud or Jung concerning symbolism. He believes that the former assumes too much in regarding certain symbols as innate, which would class them with the instincts, and that the "collective unconscious" concept of the latter, which is based largely on the universality of symbols, is far from proven. It is noteworthy that Dr. Rivers' ethnological work, which occupied him for so many years, should provoke the greatest skepticism against the progenitors of his later psychological studies.

In a chapter which is labeled "Appendix I," Dr. Rivers considers the biological function of the dream and agrees with Freud that this is to guard sleep in many instances in man. But he does not believe that the nightmare, particularly, and the dreams of animals can be explained in this way. After indulging in some rather thin speculations he concludes, "It is thus possible to bring the nightmare and other crude forms of human dream into relation with the hypothesis that the primary function of the dream is to awaken an animal and

adapt it to the appropriate form of reaction to danger" (p. 185). The "transformation" (distortion) of the dream, he suggests, is a later biological sleep-protective development. A second appendix is contributed by G. Elliot Smith, who also wrote the preface and arranged the book. He deals with the interpretation of myths, and believes that Dr. Rivers, had he lived, would have revised his brief consideration of this problem. Professor Smith's thesis is that the analogy between dreams and myths is misleading, and that "the fundamental motive underlying myth is the search for the elixir of life, prompted by the instinct of self-preservation, and not by the conflicts arising out of the desire to gratify the sexual instinct, as so often happen in dreams" (p. 191).

In January, 1922—a few months before his death—Dr. Rivers became a Labor candidate for the re-presentation of the University of London in Parliament. *Psychology and Politics* is a collection of addresses, of which the first three were connected with this candidacy. The contents of the book, with a prefatory note by Professor Smith, are as follows: *Psychology and Politics*; *Instinct in Relation to Society*; the *Concept of the Morbid in Sociology*; an *Address on Socialism and Human Nature*; an *Address on Education and Mental Hygiene*; an *Address on "The Aims of Ethnology"*; a *Note on "The Aims of Ethnology,"* by G. Elliot Smith; and the *Influence of the late W. H. R. Rivers*, by Charles S. Myers.

Dr. Rivers has misgivings about the recent uncritical applications of "practical psychology," and believes that a reaction will probably ensue. He has no psychological panacea to offer to politics; on the contrary, he states, "Both in the broader field of comparative sociology and in the narrower field of politics, knowledge of the facts of social and political behavior can make a far greater contribution to our psychology than any psychological knowledge we possess at present can contribute to our understanding and treatment of social and political problems" (p. 16). These facts will largely "be derived from the direct observation by those trained in psychology of the various forms of political behavior" (p. 18), and their accumulation is an essential preliminary to interpretation and advancement. Concerning the applicability of the knowledge of individual behavior to that of the group, Dr. Rivers insists on comparative evidence and recognizes that group activity is not the same as the sum of the activities of the individuals therein. But he has little hesitation, despite his avowed distrust of analogies, in elucidating

some of the ills of society with the knowledge of certain disorders of the individual. (Nevertheless, Freud is taken to task for making a reverse application in the concept of censorship.) Dr. Rivers pays more attention to diagnosis than to cure, but he emphasizes that the aim of social therapy should be at the underlying causes rather than at the surface symptoms; that it should change its attitude just as psychotherapy has done in this respect during the last decade or two. Education for social evils and reeducation for the neuroses are suggested, and in a somewhat different sense. The author is tantalizingly vague about the former.

The herd-instinct is given major consideration in the address on "Instinct in Relation to Society," and Dr. Rivers distinguishes between the leaderless and the led groups of both animals and men. "The process by which the leader influences the group, and is doubtless influenced by its other members, may be regarded as the prototype of the process known as prestige-suggestion, the process which is so prominent in the suggestion of hypnotism, of the medical consulting-room, and of political leadership" (p. 42). This "prestige-suggestion" is largely identified with "faith, reverence and obedience," and requires more conscious or "witting" activity than the "unwitting" "suggestion" on which the harmony of the leaderless group depends. It is submitted (p. 49) that in the Oedipus complex, the attitude towards the leader may be involved as well as the father relationship. Dr. Rivers suggests that while certain "ideas are really active there is something more behind them than an appeal to intelligence, and that they owe much of their efficacy to the power of personality, possibly to the instinctive desire of the human group to have a leader to whom it can look for guidance in the same unwitting manner with which the members of a herd of animals regard their leader" (p. 52). He concludes, "At present it seems fairly clear that no great movement is likely to succeed except under the leadership of one who is able to inspire a degree of confidence comparable with that which actuates the instinctive attitude of the animal herd towards its leader. If this be so, this conclusion has as its corollary the necessity of a personality which appeals more largely to the emotions than to the intelligence" (p. 53). Dr. Rivers might be setting the stage for Mussolini, and perhaps explain as well the difficulties in the spread of Fascism to other countries. Apparently, the more or the less led a group is, the more "unwitting" is the process.

In the lecture on "The Aims of Ethnology," Dr. Rivers expounds

and upholds the migration theory of the disposition and culture of mankind as opposed to the theory of independent origin and development, fostered mainly by Bastian, the German ethnologist. (It is odd that Dr. Rivers does not adduce the geological support to his discussion, namely, that the presence of man preceded changes in the land distribution, before which there were probably communications between the continents.) The suavity of his presentation contrasts with Professor Smith's diatribe, in which Sir James Frazer's *Golden Bough* is given short shrift along with certain concepts of Freud and of Jung.

The style of Dr. Rivers' books is fluent; clear, well-rounded sentences prevail. His content is presented with skill, if one excepts some minor inconsistencies; but, while criticizing Freud for his tendency to sweeping generalizations, he shows no small competitive ability, and is apt at times to make much or little of a fact according to his taste. The chief distinction of his work is its stimulating suggestiveness, and it is indeed unfortunate that his productivity is at an end. Very appropriate is the inclusion in *Psychology and Politics* of Dr. Myers' appreciative address on "The Influence of the late W. H. R. Rivers."

R. W. HALL

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KELLEY, T. L. *Statistical Method*. New York: Macmillan, 1923.  
Pp. xi+390.

In this treatise Professor Kelley has developed a systematic approach to the theory and practice of statistical method in relation to the needs of the economist, psychologist, educator, and biologist. The major topics covered are, in order: graphic methods, measures of central tendency, measures of variability, the normal probability distribution, comparable measures, curve fitting, measures of relationship, partial and multiple correlation, index numbers, etc.

The scope of the work is broader and yet more detailed than the familiar texts of Yule, Brown and Thomson, and others of that technical level. The work of the English biometric school during the last few decades, particularly that of Karl Pearson and his coworkers, is made easily accessible to students of exact methods in the fields previously specified. Professor Kelley has himself made many valuable contributions to our knowledge by way of applications

of more general statistical formulas to specific problems of psychology and education. As a conspicuous example of such applications, we can mention his treatment of the phenomena of regression, fallible measures, and true scores in relation to tests and measurements. The original contributions of the author also include the derivation of a large number of formulas for the probable errors of familiar measures, simplification of the technique of partial and multiple correlation, and the calculation of a new table of the probability integral which is very much more convenient for many purposes than the older one of Sheppard. The derivation of formulas for the probable errors of coefficients of correlation corrected for attenuation enables a reinterpretation of the status of the Spearman "central factor" controversy. The student with a fair knowledge of algebra can read almost all of the text with profit, the derivations and proofs being algebraic except in a few cases where the use of the calculus is unavoidable. The notations are in general those of the Pearsonian school.

The scholarship, scope, and timeliness of this work combine to warrant the prediction that it might well prove epoch-making in its influence on the advancement of quantitative sciences of psychology and experimental education. Such a treatment might be justified alone by the fact that more than three hundred formulas with their derivations have been brought together from about as many different sources not always easily accessible, or by the equally valuable service in systematizing the symbols, terminology, and practices in statistical science.

G. M. RUCH

UNIVERSITY OF IOWA

FRANZ, S. I. *Nervous and Mental Re-Education*. New York: Macmillan, 1923. Pp. ix+225.

This book is written for the surgeon and physician and also for all who are interested in child welfare, especially those teachers and principals who have crippled children in their classes. The book suggests principles of reeducation for those disorders primarily involving the nervous system rather than detailed programs for the treatment of any particular patient.

Reeducation is conceived as the establishment of new habits or of the reestablishment of old habits that have been lost. Franz shows the great number of habitual reactions in the adult which usually pass

unnoticed. And the same principles of normal habit formation maintain for the reëducation of the abnormal. One factor, however, is necessary for habit formation with the abnormal,—that of obtaining the proper mental attitude and incentives for work. "The production of a sound, normal mental attitude in the patient must have a primary place in all reëducation work." This is even more important in the purely mental case. Frequently the treatment itself may be made use of as an incentive. The author believes that the production of the proper mental attitude should be completed before the actual process of reëducation begins.

Franz divides habits into three classes: 1. motor (a reaction which invariably follows upon a given stimulus of a general character); 2. sensory (a reaction which follows a stimulus of a definite character when that stimulus is differentiated from other stimuli which have the same general character); 3. delayed (when the motor activity does not immediately follow the stimulus). The sound psychological principles underlying economical habit formation are outlined in a way that may be readily understood by the reader without special psychological training.

In Chapter V are discussed the extent, strength, time and accuracy of movement. Many useful devices for measuring them are given, as well as devices for reëducation of different phases of the movement problem. In Chapter VI methods and devices for general reëducation methods are discussed, such as electricity, heat, hydrotherapy, massage and active exercise. Accessory apparatus, such as splints and braces, are considered under two headings: those useful in overcoming defects and those which are useful as compensation for defects. An important chapter on measurements of performance follows. Such measurements are necessary to determine the extent and rapidity of reëducation and they are also useful in stimulating the incentive of the patient.

The last part of the book is concerned with neurological and mental adjustments. Chapter VIII is given over to a consideration of infantile paralysis. In this chapter rather more detailed application of reëducation principles are given than in the preceding chapters. This account should be of great value to anyone interested in the disease. In the next chapter locomotor ataxia is similarly given a more detailed treatment and special devices are described. In a similar detailed manner, the reëducation principles for cerebral

paralysis and for speech defects are described in the next two chapters.

The book closes with a chapter on the treatment of the psychotic patient. In this group are included "those individuals whose abnormalities are sufficiently acute or sufficiently grave to make the individuals asocial or antisocial." Hence Franz includes not only the insane but many others with milder manifestations of mental abnormality. The author insists that in such cases the same general principles of reeducation already stated should be followed. Such cases differ from those of the organic type principally in that the patients exhibit perverted modes of reaction. They exhibit social activities which differ from those of the normal people in the environment. "These activities must be replaced by those habits or actions which are more appropriate to the social stimuli, more suitable to the environment, and more like those of the other individuals in the community." Certain special conditions must be met before reeducation of such patients can begin: (1) a recognition of their deficiencies on the part of the patient; (2) a desire on the part of the patient to get well; (3) self-confidence of the individual in his ability to overcome the condition; and (4) the methods of reeducation must never be haphazard but must be properly directed. The use of special educational devices for these psychotic cases such as occupational therapy are discussed.

SAMUEL W. FERNBERGER

UNIVERSITY OF PENNSYLVANIA

GRIFFITH, C. R. *An Historical Survey of Vestibular Equilibration.*

University of Illinois Bull., 1922, 20, No. 5. Pp. 178.

A highly critical summary of the literature on equilibration and dizziness. The author believes, from a study of the evidence regarding a new receptor, that "We can only conclude—that the internal ear is the seat of a receptor which stands in very close functional relationship with the equilibrium of the body." The evidence does not show clearly, however, that this receptor is localized in the semi-circular canals. From a study of the anatomy, on the other hand, it is apparent that the vestibular portions of the inner ear are so placed and so constructed as to make it entirely possible for equilibratory functions to be ascribed to them. From a study of the literature regarding the mode of excitation of the receptor, Griffith believes that the physical principle of inertia may be used to good advantage

in any theory for this form of sensation. The situation is apparently much more complex, however, than the simple naïve application of the principle. Theories of this receptor have been compelled to consider three phases: (1) static or maintenance of bodily position; (2) dynamic or sensitivity to translational and rotational changes of movement, and (3) tonic.

In several sections the author briefly summarizes the literature concerned with the central connections of the receptor and with its genetic history. In a section of some 14 pages, Griffith gives a résumé of the recent clinical methods and results. "The chief interest of the clinical laboratory has been in the description of pathological cases of semi-circular disturbance and in the promulgation of a series of tests for 'vestibular normality'." "The 'normality tests,' however, have been found to be based upon a questionable doctrine of the nature of nystagmus and of all the other effects of rotation."

In a final section, Griffith outlines the psychological problem. He concludes: "There has been, then, no serious attempt on the part of psychologists to get behind the 'stimulus error' and to take account of (a) the mental processes actually found in mind during and after rotation; and (b) of the presence or absence of an element unique in the experience of rotation." The value of such a condensation of the literature may be realized when one considers the bibliography of 1,701 titles which are appended and which form the basis of this historical summary.

SAMUEL W. FERNBERGER

UNIVERSITY OF PENNSYLVANIA

## EDITORIAL ANNOUNCEMENTS

WE regret to announce the resignation of President James R. Angell as editor of the *Psychological Monographs*, which he has so successfully conducted for fourteen years. Dr. Shepherd Ivory Franz will undertake the editorship of the *Monographs*, resigning his position as editor of the PSYCHOLOGICAL BULLETIN.

THE Board of Editors of the Psychological Review Publications takes pleasure in announcing the election of Professor Samuel W. Fernberger, of the University of Pennsylvania, to take full charge of the PSYCHOLOGICAL BULLETIN, beginning January 1, 1924.

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